South Carolina
DHEC
Department of Health and Environmental Control

MEMORANDUM

TO: G. Kendall Taylor, P.G , Division Director
Division of Hydrogeology
Bureau of Land and Waste Management

THRU: Jack Gelting, Section Manager
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

FROM: Marianna DePratter, Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

SUBJ: Evaluation of Blackman Uhler Chemical Company's status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number SCD 003 349 065

DATE: December 31,1997

I. PURPOSE OF MEMO

This memorandum is written to formalize an evaluation of Blackman Uhler's status relative to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

1) Human Exposures Controlled Determination (CA725),

2) Groundwater Releases Controlled Determination (CA750).

These event codes are applicable according to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors, and clarification provided by USEPA Region IV in October

1997.

The State of South Carolina became authorized, in January 1995, for implementing those portions of RCRA covered under the HSWA Corrective Action process The recommendations provided in this document have been generated in cooperation with the USEPA Region IV staff through the use of EPA's current Environmental Indicator ranking system.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are five (5) national status codes under CA725 These status codes are

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this date.

3) NC No control measures necessary.

4) IN More information needed.

5) NO Facility does not meet definition.

Note that CA725 is designed to assess the potential for human exposures over the entire facility (i.e , the code does not evaluate specific actions undertaken at individual SWMUs). Therefore, every area at the facility must meet the definition before a YE, or NC, status code can be entered for CA725. The NO status code should be entered if there are current unacceptable risks to human health due to releases of hazardous wastes or hazardous constituents from any SWMU(s) or AOC(s) The IN status code is designed to cover those cases where insufficient information is available to make an informed decision on whether or not human exposures are controlled. If an evaluation determines that there are both unacceptable and uncontrolled current risks to human health at the facility (NO) along with insufficient information on contamination or exposures at the facility (IN), then the priority for the EI recommendation is the NO status code.

According to recent guidance from USEPA Region IV, the previous relevance of NA as a meaningful status code was eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN

to the existing YE and NC status codes. In other works, YE, NC, NO, and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA725. Therefore, the NA status code will no longer be used for facilities located in Region IV

This particular CA725 evaluation is the first evaluation performed by DHEC for Blackman Uhler Chemical Company. Because assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental medium (i e., soil, groundwater, surface water, air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media by media examination is presented, a final recommendation is offered as to the proper CA725 status code for Blackman Uhler Chemical Company.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents. RCRA Facility Investigation Report dated July 1995, RCRA Facility Investigation Workplan (Phase II) dated July 1995; Phase II RCRA Facility Investigation Report dated August 1997, and the Semi-Annual Groundwater Monitoring Corrective Action Report dated July 1997.

III. FACILITY SUMMARY

Blackman Uhler Chemical Company is located approximately two miles southeast of the city of Spartanburg, South Carolina in Spartanburg County. Blackman Uhler manufactures textile dyestuffs and specialty organic chemicals. There are six major production areas at the facility: the nitration process area; the mixing and presscake process area, the specialty chemical manufacturing area, the pigment inks production area, the disperse dyestuff production, and the dyestuff naphthol production area Raw materials used for dyestuff production include· naphthol, dye acids and salts, acids, bases, solvents and aromatic compounds.

The facility is surrounded by a fence and Blackman Uhler employs security personnel to guard the entrance to manufacturing areas of the plant. Blackman Uhler no longer operates a hazardous waste treatment unit at the Spartanburg facility. The regulated unit, a lagoon, was certified closed November 3, 1997 and Blackman Uhler conducts groundwater monitoring and corrective action under

a hazardous waste permit for postclosure care

The semi-volatile constituent, 5-Chloro-2-methyl benzenamine is the primary soil/groundwater contaminant at Blackman Uhler in both concentration and distribution. A dye intermediate, there is no toxicological data for a very similar chemical compound, 4-Chloro-2-methylaniline (CAS No. 95-69-2) for 5-Chloro-2-methyl benzenamine Because this proposed surrogate (4-Chloro-2-methylaniline) is a carcinogen, the Region III USEPA risk-based concentrations associated within it are significantly lower than risk-based concentrations associated with other contaminants detected at the site

IV. MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

Soil:

Blackman Uhler has investigated most of the twenty-nine Solid Waste Management Units (SWMUs) and Areas of Concern (AOCS) identified at the site. Fourteen of the units consist of basins/lagoons and approximately 7,300 cubic yards of waste sludge have been delineated within nine of the fourteen basins. An additional 5 cubic yards of sludge were identified at a former sump location near one of the closed basins.

Eight of the remaining sixteen SWMUs/AOCS identified at Blackman Uhler consist of units associated with the operating process wastewater treatment system Although two of these units (i.e. the pH neutralization basin and the primary clarifier) are awaiting integrity inspections, the current process wastewater treatment system does not appear to be a significant source of contamination at the site. The remainder of the SWMUs/AOCS at Blackman Uhler consist of two drum storage pads, an equipment storage yard, three storm water diversion ditches, the process sewer system, and an area formerly used for the manufacture of specialty chemicals, primarily industrial salts Although integrity testing of the process sewer system at Blackman Uhler is yet to be completed, the primary sources of soil contamination at the site appear to be the former wastewater treatment basins/lagoons that contain sludge An estimate of the amount of sludge remaining in each of these basins/lagoons is recorded in Table 1. Of the basins/lagoons containing sludge, SWMU 1 and SWMU 5, and a sump associated with SWMU 13 are located in active areas of the site. A foot or two of gravel covers the sludge remaining

at SWMU 1 Three to twelve inches of gravel followed by three to six feet of clayey fill mixed with dye and sludge, cover the waste remaining at SWMU 5. Seven feet of sandy fill covers sludge remaining at the sump associated with SWMU 13.

The different materials used to cover waste sludge at these units vary widely in their ability to prevent infiltration and the leaching of contaminants to underlying soils and groundwater; however, these cover materials do prevent direct contact or exposure to on-site employees. The former wastewater lagoons (SWMU 2,3,4) located in the area of the present day equipment storage yard (SWMU 23) are also covered with two to four feet of silty, clayey soils. Therefore, no imminent risk of exposure to on site employees exists from the waste sludge remaining at these units, either.

Waste sludge remains at the surface of an inactive wastewater lagoon (SWMU 9) and at the ground surface in the area of the closed basins/lagoons (SWMU 6,7,8). These units are located peripherally to the manufacturing areas of the site, in areas rarely used by employees. The semi-volatile constituent 5-Chloro-2-methyl benzenamine was detected in sludge samples and from soil samples underlying the sludge at concentrations exceeding Region III USEPA's risk based concentration for ingestion given an industrial exposure scenario Six semi-volatile constituents (3,3-dichlorobenzidine, 2-naphthylamine, 5-nitro-o-toluidine, pentachlorophenol, o-toluidine, and 5-chloro-2-methyl benzenamine) were detected in sludge samples and from soil samples underlying the sludge at concentrations exceeding Region III USEPA's risk based concentrations for ingestion given an industrial exposure. Despite the fact that these units are not located in the process area of the site, occasional exposures to site employees may occur No institutional controls are currently in place to inform employees of the potential risks associated with exposure to the waste sludge and contaminated soils remaining within these units.

Therefore, human health exposures are presently uncontrolled at Blackman Uhler

Groundwater:

Groundwater has been contaminated at Blackman Uhler and the facility has been operating three bedrock recovery wells since 1980 to control contaminant plume migration. The groundwater contaminant plume extends to both eastern and western property boundaries and contamination within the saprolite and bedrock aquifers was documented beyond the western property boundary during

the Phase II RCRA Facility Investigation. The ability of bedrock recovery well GM-20, located at the western property boundary, to control the full extent of the offsite lobe of groundwater contamination, is presently unknown The property west of Blackman Uhler is presently used as a golf course and groundwater has not been developed for either irrigation or potable supply However, all groundwater in the state of South Carolina is classified as a potential drinking water supply. Because the ability of the operating groundwater recovery system to halt further offsite migration is presently unknown, groundwater releases at Blackman Uhler are considered to be uncontrolled

Surface Water·

The Blackman Uhler property drains into two tributaries which bound the property on the southeastern (i.e Eastern Creek) and southwestern (unnamed) sides. These two tributaries converge offsite and flow approximately 1 3 miles southwestward before discharging to Kelsey Creek. Kelsey Creek, in turn, flows into Lake Craig, a recreational lake located approximately three miles southeast of the Blackman Uhler site at Croft State Park. There are no direct discharges of wastes or wastewater from Blackman Uhler to either of the tributaries bounding the site. Indirect discharge may occur, however, through the discharge of contaminated groundwater to surface water, or through surface water run off from the process area of the site, during high intensity rainfall events.

Very little analytical data is available regarding surface water quality at Blackman Uhler Two stream samples (SW-1 and SW-2) were collected from Eastern Creek in August 1985. Two rounds of surface water sampling of Eastern Creek were required by Blackman Uhler's hazardous waste permit when it became effective in July 1990. No organic constituents were detected in 1985 within Eastern Creek and subsequent surface water quality data for Eastern Creek could not be located within the Department's files.

No data regarding the surface water quality of the unnamed tributary southwest of Blackman Uhler is available Based on groundwater data generated during the Phase II RCRA Facility Investigation, both saprolite and bedrock aquifers are contaminated in this area and the potential exists for surface water impact due to groundwater discharge to the unnamed tributary, or to the golf course lake that gives rise to the unnamed tributary.

Although many former lagoons/basins exist at Blackman Uhler,

most are closed and few retain water. Surface water within the inactive borrow pit (SWMU 12) and the storm water retention basin (SWMU 14) was sampled during the Phase II RCRA Facility Investigation. Approximately 41 ppb of acetone was detected at SWMU 12, whereas no volatile or semi-volatile constituents were detected in surface water from SWMU 14 The concentration of acetone detected in surface water at SWMU 12 is well below its Region III USEPA risk based concentration for tap water.

Air:

There are no air quality data for SWMU/AOC at Blackman Uhler Although volatile organic constituents have been detected in sludges exposed at grade at SWMU 9 and SWMU 6,7,8, current releases to air from these units are expected to be negligible given the age of the sludges remaining there. Operations ceased at SWMU 9 in 1981, whereas operations ceased at SWMU 6,7,8 in 1980.

V. STATUS CODE RECOMMENDATION FOR CA725:

Given the absence of institutional controls to prevent the potential exposure of employees to waste sludges and contaminated soils remaining at grade within SWMU 9 and SWMU 6,7,8, plausible human exposures are not controlled at Blackman Uhler at this time. Therefore, a status code of CA 725 NO is recommended for this site.

VI. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are five (5) status codes listed under CA750:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this date

3) NR No releases to groundwater.

4) NO Facility does not meet definition

5) IN More information needed

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

The status codes for CA 750 are designed to measure the adequacy of actively (e.g , pump and treat) or passively (e.g., natural attenuation) controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The designated boundary (e g the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc) is the point where the success or failure of controlling the migration of hazardous constituents is measured for active control systems. Therefore, every contaminated area at the facility must be evaluated and found to have the migration of contaminated groundwater controlled before a "YE" status code can be entered

If contaminated groundwater is not controlled in any area(s) of the facility, the NO status code should be entered. If there is not enough information at certain areas to make an informed decision as to whether groundwater releases are controlled, then the IN status code should be entered If an evaluation determines that there are both uncontrolled groundwater releases for certain units/areas (NO) and insufficient information at certain units/areas of groundwater contamination (IN), then the priority for the EI recommendation should be the NO status code

According to recent guidance from USEPA Region IV, the previous relevance of NA as a meaningful status code was eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NC status codes In other words, YE, NC, NO, and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA725. Therefore, the NA status code will no longer be used for facilities within Region IV.

This evaluation for CA750 is the first formal evaluation performed for Blackman Uhler Chemical Company. Please note that CA750 is based on the adequate control of all contaminated groundwater at the facility. The following discussions, interpretations and conclusions on contaminated groundwater at the facility are based on the following reference documents: RCRA Facility Investigation Report dated July 1995; RCRA Facility Investigation Workplan (Phase II) dated July 1995; Phase II RCRA Facility Investigation Report dated August 1997, and the Semi-Annual Groundwater Monitoring Corrective Action Report dated July 1997

VII. STATUS CODE RECOMMENDATION FOR CA750:

Contaminated groundwater has migrated offsite from multiple sources at the Blackman Uhler Chemical Company. Because the ability of Blackman Uhler's operating groundwater recovery system to halt further offsite migration is presently unknown, groundwater releases at the site are considered uncontrolled. Therefore a status code of CA750 NO is recommended for this site.

VIII. SUMMARY OF FOLLOW-UP ACTIONS:

Blackman Uhler is drafting a Corrective Measures Study Workplan to evaluate different remedial approaches to stop on-going releases or to prevent future releases from SWMU 1,2,3,4,5,6,7,8,9, and 13. Furthermore, Blackman Uhler is negotiating access agreements with the property owner west of the site, in order to delineate the leading edge of the groundwater contaminant plume that has migrated offsite. Once the configuration of the offsite extent of the plume is known, the effectiveness of Blackman Uhler's operating groundwater recovery system will be evaluated to ensure that further migration of the groundwater contaminant plume, is halted

cc: Channing Bennett, Region IV EPA